

# PATENT SPECIFICATION

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## (54) AN IMPROVED ROOFING MATERIAL

(71) We, PERMANITE LIMITED, a British Company, of 455 Old Ford Road, London, E.3, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to an improved roofing material in flexible sheet or strip form capable of being rolled for convenience in storage, transport and manipulation when being applied for use, the improved material being particularly suitable for use as a roof lining or underlayer when applied to, for example, the rafters below the slates, tiles or other roof covering to provide a lining or underlayer possessing adequate strength and durability and aiding resistance to weather conditions, and providing heat insulation.

The roofing material according to the invention comprises a sheet or strip of paper-like flexible absorbent fibre felt made wholly or mainly either of animal and/or vegetable fibres or of asbestos fibres, said felt being impregnated with bituminous material such as bitumen, coal tar pitch or asphalt and covered on one face with a continuous coating or film of a water-impervious synthetic plastics material bonded thereto, the composite sheet or strip of fibre felt and synthetic plastics material bearing on one face thereof a mat or fleece of loosely coherent fibrous insulating material in adhesive contact with the composite sheet or strip.

The synthetic plastics coating or film may be bonded to the impregnated fibrous felt sheet or strip by an adhesive which may be bitumen or other waterproof material.

Instead of the coating of synthetic plastics

material being applied to the impregnated felt layer as a pre-formed film, the plastics material may be applied in solution, as an emulsion or, in the case of thermoplastic plastics material, in powder form. Heat, which may conveniently be derived from the impregnating agent, is then used to drive off the solvent or the emulsifying agent or to fuse the thermoplastic plastics material so as to form a continuous coating.

Suitable synthetic plastics materials are polythene or polyvinyl chloride.

The plastics coating may also be bonded to the impregnated fibrous layer by applying a plastics film to the impregnated felt layer immediately after the impregnation and whilst the impregnating material, for example, bitumen, coal tar pitch or asphalt is still at an elevated temperature and is tacky. In this way it is not necessary to apply a film of adhesive to the impregnated felt layer.

Whilst the heat for fusing the thermoplastics material or for vaporising the solvent or the emulsifying agent has been described as derived from the impregnated felt layer whilst at elevated temperature, heat may be derived from sources external to the impregnated layer.

To one face of a composite flexible sheet prepared as described above, there is applied a mat or fleece of loosely coherent fibrous insulating material adhering to the composite sheet.

The mat or fleece may be applied against the exposed face of either the impregnated felt layer or of the synthetic plastics layer, more usually the latter, and adhesion may be effected by the preliminary application of lines of adhesive, e.g. bitumen, applied hot, or cold in solution in solvent, or as an emulsion to the

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appropriate face of the composite flexible sheet.

When the mat or fleece is applied against the synthetic plastics film or coating, the other surface of the finished material usually has an additional coating of bituminous material finished with a surfacing of talc.

As suitable materials for the insulating mat or fleece may be mentioned glass fibre or mineral wool in which the loosely coherent fibres are randomly disposed and the mat or fleece may have a thickness of  $\frac{1}{2}$  inch or more in the unstressed condition of the material.

#### WHAT WE CLAIM IS: :—

1. A roofing material comprising a sheet or strip of paper-like flexible absorbent fibre felt made wholly or mainly either of animal and/or vegetable fibres or of asbestos fibres, said felt being impregnated with bituminous material and covered on one face with a continuous coating or film of a water-impervious synthetic plastics material bonded thereto, the composite sheet or strip of fibre felt and synthetic plastics material bearing on one face thereof a mat or fleece of loosely coherent fibrous insulating material in adhesive contact with the said composite sheet or strip.

2. A roofing material as claimed in claim 1 wherein the synthetic plastics coating or film is bonded to the impregnated fibrous felt sheet or strip by means of a waterproof adhesive.

3. A roofing material as claimed in claim 2 wherein the waterproof bonding material is bitumen.

4. A roofing material as claimed in any one of the preceding claims wherein the mat or fleece of loosely coherent fibrous insulating material is bonded to the said composite sheet or strip by spaced lines of adhesive applied to one face of the said composite sheet.

5. A roofing material as claimed in any one

of the preceding claims wherein mat or fleece is adhered to the coating or film of plastics material and the face of the impregnated fibre felt away from the mat or fleece is covered with a supplementary coating of bituminous material finished with a surfacing of talc.

6. A roofing material as claimed in any one of claims 1 to 5 wherein the mat or fleece is composed of randomly disposed and loosely coherent glass or mineral fibres and has a thickness of  $\frac{1}{2}$  inch or more in the unstressed condition of the material.

7. A method of producing a roofing material which consists in impregnating a sheet or strip of paper-like flexible absorbent fibre felt made wholly or mainly either of animal and/or vegetable fibres or of asbestos fibres with hot bituminous material, applying a pre-formed film, a solution or an emulsion of a synthetic plastics material to one face thereof and heating the synthetic plastics material so that it is bonded or set and bonded to form a continuous water-impervious coating on one face of the impregnated sheet or strip, and adhering a mat or fleece of loosely coherent fibrous insulating material to an exposed face of the resulting composite sheet or strip of fibre felt and synthetic plastics material.

8. A method according to claim 7 wherein the synthetic plastics material is applied before cooling of the impregnated sheet or strip, the residual heat of the impregnated sheet or strip effecting the bonding or setting and bonding of the synthetic plastics material.

9. A roofing material according to claim 1 substantially as hereinbefore described.

10. A method according to claim 1 substantially as hereinbefore described.

REDDIE AND GROSE.

Agents for the applicants.

## Patent Abstracts of Japan

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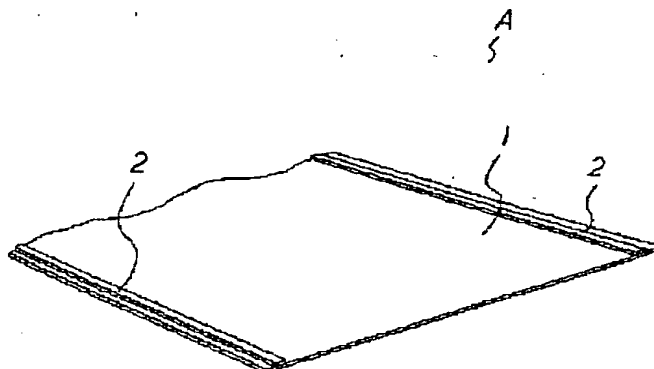
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APPLICANT : IG TECH RES INC;

INVENTOR : ARASHI SHIZUO;

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TITLE : SHEET SUBSTANCE



**ABSTRACT :** PURPOSE: To enhance workability, water prevention, securing strength and so forth by forming reinforcing parts in the proximity of, at least, both ends in the longitudinal direction of a sheet such as an asphalt felt or the like.

**CONSTITUTION:** The sheet substance A consists of a sheet constituted of laminating one kind or two or more kinds, e.g. of asphalt felt, asphalt roofing, felt, windbreak and moisture prevention sheet, etc. Herein, a sheet subjected to a flame retardant treatment is available, and reinforcing parts 2 are formed every stripe at both ends with respect to the longitudinal direction and having the width of the order of 20-30mm, and the material is made of synthetic resin band (PP band or the like), synthetic resin yarn, cloth, non-woven fabric, felt, and so on. In this way, some effects are given. such as non-flutter against wind, easy execution, large securing strength, perfect water prevention, and no fear of water leakage and the like.

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